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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/862,788	05/18/2001	Mark Ahmadjian	AFB00500	8998

7590 03/11/2004

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EXAMINER

KIM, AHSHIK

ART UNIT	PAPER NUMBER
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2876

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

efw

Office Action Summary	Application No.	Applicant(s)	
	09/862,788	AHMADJIAN ET AL.	
	Examiner	Art Unit	
	Ahshik Kim	2876	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/11/03 (Response).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendment

1. Receipt is acknowledged of the amendment filed on December 11, 2003. In the
5 amendment, Applicant traversed the rejection previously made without amending any claims.
Currently, claims 1-15 remain for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
10 obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a person
having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the
15 manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the
claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various
claims was commonly owned at the time any inventions covered therein were made absent any
20 evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out
the inventor and invention dates of each claim that was not commonly owned at the time a later
invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)
and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-9 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over
25 Hill, Jr. et al. (US 5,850,285, previously cited) in view of Hasson (US 5,625,452, previously
cited) and Hertel et al. (US 6,118,531).

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Re claims 1, 3, 6, 7, 11, 14, and 15, Hill teaches a rocket/aircraft exhaust plume detecting system (See abstract) comprising an electro-optical components 10 and 16, a filter 18 and a spectrometer 20 which detects spectral reference of the emission (col. 5, lines 35+). As further disclosed in the abstract, a particular wavelength (i.e., 0.2 – 200 microns) can be detected and
5 captured. Hill further teaches that the system detects UV and IR frequencies (col. 3, lines 21+). Hill additionally discloses using amplifier (col. 4, line 29 – col. 5, line 5; col. 5, lines 45-57; col. 6, lines 34-46), which stimulates spectral reference of the emission, which in turn, would result in reducing noise (or background radiation).

Hill fails to specifically teach or fairly suggest the apparatus is mounted on above-flying
10 or orbiting platform.

Hasson discloses a target acquisition system 10 including through clouds (see figure 3) utilizing target's electromagnetic spectrum. As shown in figure 3, the system can be installed in an airplane 102 (col. 2, lines 5+; col. 5, lines 59+). Hasson further teaches that the system detects emission lines of sodium (Na) and Potassium (K) by atomic line filters as described in
15 claims 6 and 10

In view of Hasson's teaching, it would have been obvious to an ordinary skill in the art at the time the invention was made to install the plume detector on airborne carrier to the teachings of Hill in order to efficiently collect the exhaust sample from the rocket/missile. Although Hill is silent as to where the system can be installed, it would have been obvious to one ordinary skill in
20 the art to install such system where detecting and interrogating of the jet/rocket plume is efficient and most precise. Obviously, as shown by Hasson, installing such system airborne or satellite,

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the plume can be captured before it dissipates or diluted/contaminated by other particles in the air, and thus an obvious expedient.

Hill/Hasson fails to specifically teach or fairly suggest the apparatus utilizes a lock-in amplifier.

5 Hertel discloses a method for identifying the particles contained in a gaseous or liquid or or carrier medium (see abstract). The apparatus further comprises a lock-in amplifier (col. 4, lines 28-56).

In view of Hertel's teaching, it would have been obvious to an ordinary skill in the art at the time the invention was made to employ well-known lock-in amplifier to the teachings of
10 Hill/Hasson in order to collect/recover signals in noisy background. Lock-in amplifiers are commonly used to measure relatively clean signal when noise in the background is not to be rectified with the signal. Accordingly, by incorporating lock-in amplifier, the noise-related errors can be significantly reduced. Such modification – incorporating lock-in amplifier would have been an obvious expedient, well within the ordinary skill in the art.

15 Re claim 2, detectable wavelength of emission plume includes CO₂, CO, NO₂, H₂O, and other atomic or ionic species (col. 5, lines 6+; col. 5, lines 22+).

Re claim 4, a use of a narrow band filter (col. 2, lines 54+) and a radiometric component (col. 4, lines 21) is also disclosed.

Re claims 5 and 13, Hill also discloses that the device is able to distinguish rocket/missile
20 plume from a non-threatening or natural objects such as flair or cloud (col. 1, lines 45+).

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Re claims 8 and 9, Although Hill does not use the term photometer, a detector/photomultiplier 22 measures the luminescence of an exhaust plume as shown in figure 2 (col. 3, lines 45-47)

5 5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hill, Jr. et al. (US 5,850,285) as modified by Hasson (US 5,625,452) and Hertel et al. (US 6,118,531) as applied to claim 1 above, and further in view of Houlberg (US 6,072,571, previously cited). The teachings of Hill as modified by Hasson and Hertel have been discussed above.

10 Hill/Hasson/Hertel fail to specifically teach or fairly suggest of utilizing GPS system to find the coordinate of the rocket/missile.

Houlberg teaches a system for tracking a target, which tracks a flight path of an object such as a missile and satellite (See abstract; col. 3, line 55 – col. 4, line 6) comprising the global positioning system 28 (col. 4, lines 46+).

15 In view of Houlberg's teaching, it would have been obvious to an ordinary skill in the art at the time the invention was made to incorporate an old and well-known GPS system to the teachings of Hill/Hasson/Hertel in order to find the coordinates of the missile/rocket. GPS system is old and well known to one of ordinary skill in the art to track satellites, aircrafts and other objects, which warrants tracking. Accordingly, detecting and tracking airborne objects such as missiles and rockets are crucially important in testing or real environment. By
20 accommodating GPS system to Hill/Hasson/Hertel, a flying object can be identified, and the current location and the flight path of the object can be anticipated, and thus an obvious expedient.

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Response to Arguments

6. Applicant's remarks filed on December 11, 2003 have been carefully considered.

Examiner appreciates Applicant's explanation on lock-in amplifier. Additional search and consideration was accorded for the plume detector or other measuring apparatus comprising

lock-in amplifier. As indicated above, the Applicant did not amend previously presented claims, and therefore, this Action is made non-final.

Conclusion

I. Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Ahshik Kim* whose telephone number is (571)272-2393. The examiner can normally be reached between the hours of 6:00AM to 3:00PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee, can be reached on (571)272-2398. The fax number directly to the Examiner is (571)273-2393. The fax phone number for this Group is (703)872-9306.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [ahshik.kim@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Ahshik Kim
Patent Examiner
Art Unit 2876
March 3, 2004

MICHAEL G. LEE
SUPERVISORY PATENT EXAMINER
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